STATISTICAL ANALYSIS OF DATA SETS LEGISLATIVE TYPE

PhD Senior Lecturer Gheorghe SĂVOIU
University of Piteşti
PhD Nicolae COSTAKE
CMC (ICMCI)

Abstract

This paper identifies some characteristic statistical aspects of the annual legislation's dynamics and structure in the socio-economic system that had defined Romania, over the last two decades. After a brief introduction devoted to the concepts of social and economic system (SES) and societal computerized management (SCM) in Romania, first section describes the indicators, the specific database and the investigative method and a second section presents some descriptive statistics on the suggestive abnormality of the data series on the legislation of the last 20 years. A final remark underlines the difficult context of Romania's legislative adjustment to EU requirements.

Keywords: social and economic system (SES) societal computerized management (SCM), e-management, abnormality of the data distribution, descriptive statistics, Jarque – Bera test.

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The aim of this brief introductory part is to clarify the definitions and the contents of two concepts like social and economic system (SES) and societal computerized management (SCM) in Romania, as still emerging solutions derived and adapted from other two strategic European and international concepts of the information society (IS) and e-societal management (e-SM). The both concepts SES and SCM suggest the importance of a new e-societal management.

The world's population is in a situation somehow similar to that of other evolutive period, the advanced communication and the revolution caused by information are found now equivalent as importance and impact with the industrial revolution. There still are some important differences that emphasize the pressure of the changes, particularly with regard to the period and the dynamics of the changes (a maximum acceptable period of 20-25 years) and those due to the accelerated depletion of natural resources and the expected population explosion (a world population between 9 and 10 billion inhabitants could be a reality in 2050) and, especially, those caused by increased frequency and intensity of crises and global or regional economic

recessions.

Modern e- societal management is focused on a new type of economy, which is based on e-knowledge and e-learning, along with the importance of skills acquired in the art of a new communication. The new economy and the new e-management are placed in a context of new expertise and new knowledge, new information and new skills.

A model of high socio-economic system (SES) is an entity that can integrate hierarchical type like Universe - Terra - SES (aggregating natural resources, humanity, artefacts, etc.). SES structure includes five subsystems generally recognized: a) biological and non-biological natural resources subsystem; b) human population with its housing and household subsystem; c) financial and nonfinancial organizations subsystem d) public institutions subsystem; e) harmful or toxic subsystem of SES.

Societal computerized management includes authorities for executive decision type (central, regional, and local) judicial, legislative, and societal reactive (electoral, statistics, audit and control, etc.). This paper is original from a statistic point of view nothing else but a descriptive and introspective analysis of the legislative component of the societal computerized management.

One can include in the category of the new conceptualizations the most recent computerized science managerial solutions that exist on the international market, be it either an extended of Internet type, or a prohibitive selective one of Internet type, but without being able to fully define them as substitutes of the manager, but which gradually insinuate themselves in such functions, in more and more economies present on the global economy. *Le Journal du Management* and *L'Encyclopédie e-Business* presents the modern systems and methods of e-management (http://www.journaldunet.com/encyclopedie/).

New forms of the modern e-Management or the typology of e-Management Systems

I.CMS-Content Management System (integrated administration system of the contents of a Web site, for *static* documents of graphical type and *dynamic* of images type, from the companies' databases, containing two mechanisms, the first having a role of organization, classification, and association into metadata of the information, and the second one having an applicative role, of a work-flow type or chains of successive validations, according to the stages of data processing of the collaborators);
II.BPMS-Business Process Management System (logical ensemble meant to formalize the procedures that define the activities of a company with the purpose of entirely automate them);
III.CRMS-Customer Relationship Management (multi-channel administration system, respectively web, messenger, mail, telephone, fax, for the relationships with the company's clients, being in the position to ensure the planning and control of the activities before and after the sale);
IV.PLMS-Product Lifecycle Management System (logical ensemble meant to administer all the information about the product and its cycle of life, divided between all the actors that can contribute to the development and control of its quality);
V.EIMS-Employee Internet Management System (logical ensemble of interventions meant to regularize the use of the Internet by the employees within the company);
VI.ERMS- Employee Relationship Management System (system of administration of the relationships with the collaborators, through interface of Web search, in the data of the human resources);
VII.KMS-Knowledge Management System (system of administration with computer science means of the significant information purchased and meant for the internal circulation, which encompasses the know-how, but also interactive formation sub-systems);
VIII.SCMS-Supply Chain Management System (ensemble of logical procedures that allow the optimum administration of the totality of fluxes, informational and physical, including the interfaces between different producers and suppliers, involved in executing a product/service);
IX.ERMS-Employee Relationship Management System (system of administration of the relationships with the customers, reuniting applications concerning the accessible human resources with those effectively used in the company, thanks to an interface of a Web navigator type);
X.SRMS-Supplier Relationship Management System (system of administration of the relationships with the suppliers that carry out the functions keeping records of the offers, of piloting through contracts, remembering the suppliers, of administration of contents of the supplies and catalogues);
XI.e-transformation (defined as continuous aggregation of some of the previously presented systems, usually reuniting in minimum conditions: CRMS, SRMS, SCMS, and KMS).

Indicators, data and methods of statistical investigation

The processed data sets have focused on two types of indicators, namely absolute and relative (structural and coordination). For the first category of indicators were extracted data on the annual number of documents and legislative regulations, then detailed categories: 1) laws (L); 2) Government Emergency Ordinance (GEO); 3) Government Ordinance (GO); 4) GEO + GO aggregate; 5) Governmental Decisions (GDs) and in the second category of relative indicators, expressed as a percentage: a) GEO / L; b) GO / L; c) GO / GEO; d) (GEO + GO) / L; e) (GEO + GO) / GD; f) GDs / L, the period of analysis was given for the last 22 years (1990-2012), of which, however, GEO and GO categories of data appear only from 1992.

Database of legislative indicators for Romania (1990 - 2012)

Anul	Total SER01	Laws SER02	GEO SER03	GO SER04	*(GEO+GO) SER05*	GDs SER06
1990	1426	54	-	-	-	1372
1991	990	109	-	-	-	881
1992	1046	145	1	34	*35*	866
1993	943	104	2	29	*31*	808
1994	1246	156	2	85	*87*	1003
1995	1322	152	2	48	*50*	1120
1996	1792	156	14	48	*62*	1574
1997	1346	223	94	78	*172*	951
1998	1489	274	77	141	*218*	997
1999	1578	221	225	128	*353*	1004
2000	2037	250	300	151	*451*	1336
2001	2434	808	198	89	*287*	1339
2002	2534	690	215	76	*291*	1553
2003	2384	621	127	100	*227*	1536
2004	3136	522	142	95	*237*	2377
2005	2531	414	209	56	*265*	1852
2006	2618	524	136	65	*201*	1893
2007	2174	393	157	49	*206*	1575
2008	2245	310	228	28	*256*	1679
2009	2126	391	111	27	*138*	1597
2010	2074	292	131	31	*162*	1620
2011	2022	331	128	30	*158*	1533
2012	1653	222	96	26	*122*	1309
Total	43146	7362	2595	1414	*4009*	31775
Total laws and legislative decisions / day	7,2	1,2	0,5	0,2	*0,7*	5,3

The structural transformation and the construction of coordination indicators focusing on laws as a basis for reporting, but not exclusively, generated the following database derived indicators expressed as percentages:

Database of the legislative relative indicators for Romania (1990 - 2012)

percentage (%)

Year	GEO / L SER07	GO / L SER08	GO / GEO SER09	(GEO+GO) / L SER10	(GEO+GO) / GDs SER11	GDs / L SER12	Economic Growth rate SER13
1990	NA	NA	NA	-	-	2540.7	-
1991	NA	NA	NA	-	-	808.3	-12.9
1992	0.7	23.4	3400.0	24.1	4.0	597.2	-8.8
1993	1.9	27.9	1450.0	29.8	3.8	776.9	1.5
1994	1.3	54.5	4250.0	55.8	8.7	642.9	3.9
1995	1.3	31.6	2400.0	32.9	4.5	736.8	7.1
1996	9.0	30.8	342.9	39.7	3.9	1009.0	3.9
1997	42.2	35.0	83.0	77.1	18.1	426.5	-6.1
1998	28.1	51.5	183.1	79.6	21.9	363.9	-4.8
1999	101.8	57.9	56.9	159.7	35.2	454.3	-1.2
2000	120.0	60.4	50.3	180.4	33.8	534.4	2.4
2001	24.5	11.0	44.9	35.5	21.4	165.7	5.7
2002	31.2	11.0	35.3	42.2	18.7	225.1	5.1
2003	20.5	16.1	78.7	36.6	14.8	247.3	5.2
2004	27.2	18.2	66.9	45.4	10.0	455.4	8.5
2005	50.5	13.5	26.8	64.0	14.3	447.3	4.2
2006	26.0	12.4	47.8	38.4	10.6	361.3	7.9
2007	39.9	12.5	31.2	52.4	13.1	400.8	6.3
2008	73.5	9.0	12.3	82.6	15.2	541.6	7.1
2009	28.4	6.9	24.3	35.3	8.6	408.4	-7.5
2010	44.9	10.6	23.7	55.5	10.0	554.8	-1.3
2011	38.7	9.1	23.4	47.7	10.3	463.1	2.5
2012	29.0	11.7	27.1	55.0	9.3	589.6	0.2

The method of statistical investigation is a specific descriptive analysis of the data series and one of the identification of certain statistical characteristics about normality or abnormality of the analyzed legislative indicators' distribution, was based on the values Jarque Bera test, and Skewness and Kurtosis values for asymmetry and vaulting or eccentricity. For the descriptive statistical analysis we have used Eviews software package.

Descriptive statistics for abnormality of the legislative data series

The results of the descriptive statistics are presented in the following table, in which, however, to ensure comparability of data in the event of subsequent statistical confrontation we cannot use the 1990 and 1991 data, and the final period of analysis remained 1992-2012 (the last two decades).

Descriptive statistics of legislative indicators in Romania (1992 – 2012)

	SER01	SER02	SER03	SER04	SER05	SER06	SER07
Mean	1939.524	342.8095	123.5714	67.33333	190.9048	1405.810	35.26667
Median	2037.000	292.0000	128.0000	56.00000	201.0000	1533.000	28.40000
Maximum	3136.000	808.0000	300.0000	151.0000	451.0000	2377.000	120.0000
Minimum	943.0000	104.0000	1.000000	26.00000	31.00000	808.0000	0.700000
Std. Dev.	578.7145	193.9687	86.75977	38.92600	108.2501	393.4000	31.16025
Skewness	0.014837	0.901582	0.064564	0.755540	0.408565	0.409228	1.324132
Kurtosis	2.251690	2.921933	2.205377	2.503998	2.894751	2.936743	4.412156
Jarque-Bera	0.490743	2.850309	0.567087	2.213209	0.593931	0.589636	7.881546
Probability	0.782414	0.240471	0.753110	0.330680	0.743070	0.744667	0.019433
Sum	40730.00	7199.000	2595.000	1414.000	4009.000	29522.00	740.6000
Sum Sq. Dev.	6698209.	752477.2	150545.1	30304.67	234361.8	3095271.	19419.23

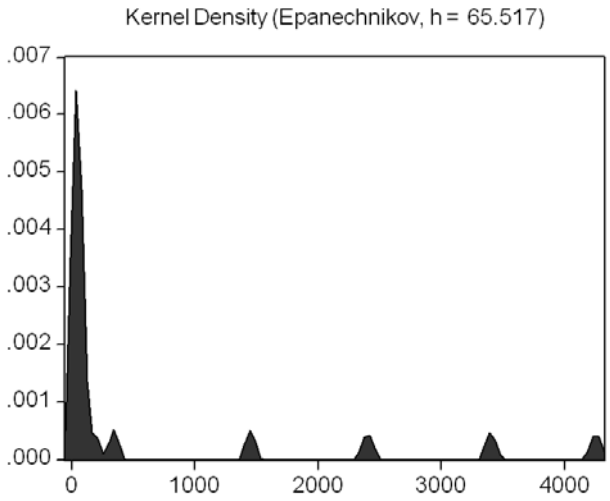
	SER08	SER09	SER10	SER11	SER12
Mean	24.52381	602.7905	60.46190	13.81905	495.3476
Median	16.10000	50.30000	47.70000	10.60000	455.4000
Maximum	60.40000	4250.000	180.4000	35.20000	1009.000
Minimum	6.900000	12.30000	24.10000	3.800000	165.7000
Std. Dev.	17.71561	1225.536	40.00553	8.754234	194.4200
Skewness	0.952478	2.061712	2.040584	1.116362	0.695677
Kurtosis	2.482423	5.833294	6.339789	3.718376	3.736749
Jarque-Bera	3.409647	21.90141	24.33385	4.813484	2.168829
Probability	0.181804	0.000018	0.000005	0.090108	0.338100
Sum	515.0000	12658.60	1269.700	290.2000	10402.30
Sum Sq. Dev.	6276.858	30038773	32008.85	1532.732	755982.4

Software used: Eviews

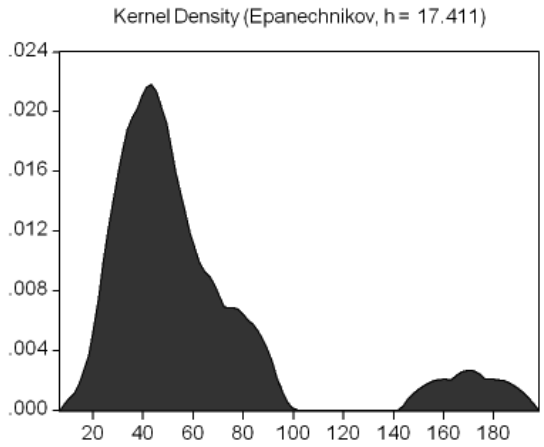
The statistical series of relative indicators of coordination and structural type are only GO / GEO and (GEO + OG) / L or SER09, respectively SER10, that have failed the Jarque - Bera test (JB calculated for these series is much higher than the limit of normality = 9.21), which means the rejection of the normality of their distributions hypothesis:

The abnormality of Kernel density distributions for series GO/GEO or SER09 and (GEO + OG) / L or SER10

Graph no.1



Graph no. 2



Correlation Matrix

R	SER13
SER01	0.559
SER02	0.418
SER03	0.267
SER04	0.040
SER05	0.228
SER06	0.554
SER07	0.001
SER08	-0.220
SER09	-0.136
SER10	-0.102
SER11	-0.043
SER12	-0.044
SER13	1

An econometric model of the economic growth rate explained by Governmental Decisions (GD) and the legislative errors or corrections (GO / L)

Dependent Variable: SER13 = ECONOMIC GROWTH RATE				
Method: Least Squares Sample: 1992 2012				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-10.66468	5.582019	-1.910542	0.0721
SER06	0.008307	0.003102	2.677583	0.0154
SER08	0.039852	0.068892	0.578470	0.5701
R-squared	0.319355	Mean dependent var		1.990476
Adjusted R-squared	0.243728	S.D. dependent var		5.181400
S.E. of regression	4.505948	Akaike info criterion		5.980237
Sum squared resid	365.4643	Schwarz criterion		6.129455
Log likelihood	-59.79249	F-statistic		4.222750
Durbin-Watson stat	1.406446	Prob(F-statistic)		0.031354

Conclusions

This statistical analysis of data series highlights a legislative abnormality distributional type with decision-making and managerial impact for the relationship between GO and GEO, respectively of the aggregate (GEO + GO) and laws. The cause is their dual nature that brings insufficient separation of state powers in Romania, reunited with the imprecision and vagueness of insufficient detail laws in Romania over the last two decades. The model of economic growth rate as an endogenous factor explained by the Governmental Decisions (GD) and the legislative errors or corrections (GO / L) in Romania could be a good start option for a new method of analysis of the convergence to EU for our economy.

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